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ABSTRACT

A model for predicting student credit hours (SCH) over a 2-year period was developed at the University of South Florida. A major application of the model would be to estimate the expected loss of upper-level SCH that would occur as a result of reduced lower-level enrollment. Attention was focused on the long-range effect of lower-level enrollment caps. The model may also be useful for estimating SCH reductions due to increased admission standards or more restrictive changes in the eligibility requirements for federal student aid programs. Components of the model include: mean SCH by course level; student type; and retention rate by student type over time. The predicted SCH means and retention rates were developed from a 50 percent random cohort sample of the 4,696 new University of South Florida student population from 1976 to 1980. The cohort groups were based on entering term. The remaining half of the student population was used to validate the model. For all student types combined, the predicted SCH was approximately two percent greater than the actual SCH generated. Statistical tables provide the SCH means and retention rates for each cohort group (fall, winter, spring, summer) by student type for eight terms, along with validation results. (SW)

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A Model for Predicting Student Credit Hours

by

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This paper was presented at the 1982 Annual Conference of the Southern Association for Institutional Research held in Birmingham, Alabama, October 1982. It was reviewed by the SAIR Publications Committee and was judged to be of high quality and of interest to others concerned with the research in higher education. This paper has therefore been selected to be included in the ERIC collection of Conference Papers.

Gerald W. McLaughlin
President, SAIR

Abstract

The purpose of this research was to develop a model for predicting SCH over a two-year period. A major application of the model would be to estimate the expected loss of upper level SCH that would occur as a result of reduced lower level enrollment. The present study was conducted to assess the long range effects of lower level enrollment caps, but other institutions may find the model useful for estimating SCH reductions due to increased admission standards or more restrictive changes in the eligibility requirements for federal student aid programs. The components of the model include: 1) mean SCH by course level; 2) student type; and 3) retention rate by student type over time. The predicted SCH means and retention rates were developed from a 50 percent random cohort sample (n=4,696) of the new USF student population from 1976 to 1980. The cohort groups were based on entering term. The remaining half of the student population was used to validate the model. For all student types combined, the predicted SCH was approximately 2 percent greater than the actual SCH generated.

Preface

While institutions in the north are experiencing enrollment declines, many of those in the sunbelt are still experiencing some enrollment growth pressure. The Florida State government is willing to support this growth in order to meet its commitment to provide an undergraduate education to all qualified citizens, but it must also consider the many other demands on state funds. The educational planners at the State level are making an effort to channel lower level undergraduate students into the Community College system as a way to meet its commitment at the lowest possible cost. One method being used to accomplish this goal is the imposition of enrollment caps on lower level full-time equivalent (FTE) enrollment at the Universities.

While the setting of caps is a perfectly reasonable way to limit the use of Universities instead of Community Colleges for lower division instruction, it creates the necessity for monitoring not only the admission of lower level students but also the effect of lowering the number of incoming students on future upper division credit hour generation. In Florida, this second requirement is complicated by the political rather than analytical nature of the enrollment projection process. The State University System funding is based on a five year enrollment plan. The planners at the University of South Florida felt that it would be advisable to project the effect of lower level caps on future upper division credit. The analysis will allow the planners to influence future enrollment plans to avoid loss of funding which could result from missing enrollment targets by more than the allowable margin.

The University of South Florida is an urban institution located in the Tampa Bay Area. It has an enrollment of 27,000 students who produce 17,000 FTEs and an E & G budget of 84 million.

Introduction

The present study is a longitudinal analysis of undergraduate Student Credit Hour (SCH) behavior by student type from Fall 1976 to Summer 1980. The intended outcome of this research is a simple mathematical model for predicting the expected loss of SCH that would occur as a result of limiting lower level enrollment. Such a model will provide a useful planning tool for estimating future loss of funding due to limitations on lower level FTE, reductions resulting from the effects of tightening eligibility requirements for federal student financial aid programs, or any other drop in lower level admissions. The SCH prediction model was developed from a 50 percent random cohort sample (n=4,696) of the USF student population from 1976 to 1980. The cohort groups were based on entering term and student type. The model was validated by comparing the actual SCH with the predicted SCH for the remaining half of the population.

Methodology

The major predictive components of the model are based on: 1) mean SCH by course level (lower, upper, and total); 2) student type (FTIC in-state, FTIC out-of-state, lower level transfer in-state, and lower level transfer out-of-state); and 3) retention rate by student type over time. The model was designed

to predict undergraduate[1] SCH by term for a period of up to two years. As a method of calculating the most stable SCH means for each of the four student types for a period of two academic years, a cohort analysis was performed. Four sets of means and retention rates were developed based on entering terms. For greater clarity, the structure of the data base is shown in Table 1.

Table 1
Cohort Population Size and Structure

Cohort Group	Begin Term	End Term	N
Fall	Fall '76	Summer '78	2,204
	Fall '77	Summer '79	2,705
	Fall '78	Summer '80	2,725
Subtotal Fall			7,634
Winter	Winter '77	Fall '78	419
	Winter '78	Fall '79	416
Subtotal Winter			835
Spring	Spring '77	Winter '79	232
	Spring '78	Winter '80	209
Subtotal Spring			441
Summer	Summer '77	Spring '79	257
	Summer '78	Spring '80	224
Subtotal Summer			481
Total			9,391

Table 1 provides a detailed overview of the structure of the data base. A total of 9,391 students were included in the study. This population was randomly split into model and test groups. Each group contained approximately 50 percent of the total population. The model group was used to develop aggregate SCH means

[1] Graduate SCH generated by undergraduate students was found to be too small to warrant analysis.

and retention rates for each cohort group for eight terms or two academic years. To test the accuracy of the model in predicting SCH, the actual SCH produced by the test group was compared to the predicted SCH for a two year period.

Model Development

The SCH means and retention rates for each cohort group (Fall, Winter, Spring, and Summer) by student type for eight terms are presented in Tables 2-5 respectively. These means and retention rates are the major predictive elements of the model.

Examination of Tables 2 - 5 reveals that the upper level SCH means and retention rates by student type vary according to cohort group or entering term. These data can be used for determining the best term for initiating reductions in lower level enrollment. In other words, in which term will reductions have the smallest impact on upper level SCH? The identification of this term would appear to be a function of mean upper level SCH and retention rate over a two-year period. As a method of analyzing these data, mean upper level SCH by student type was weighted by retention rate.[2] These data are shown in Table 6.

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[2] $\text{Adj}\bar{X}_{ul_i} = (\Sigma\ R_{ij}\bar{X}_{ul_i})/8$ where:

$\text{Adj}\bar{X}ul_i$ = adjusted upper level SCH weighted by retention rate for student type i

R_{ij} = retention rate for student type i and term j

$\bar{X}ul_i$ = mean upper level SCH for student type i in term j

Table 2

Fall Cohort SCH Means By Student Type and Level Over Eight Consecutive Terms

Term	Student Type	R*	n	Lower $\bar{X}$	Lower SD	Upper $\bar{X}$	Upper SD	Total $\bar{X}$	Total SD
1st Fall	FTIC Instate	1.00	2296	11.29	3.20	1.86	2.75	13.15	2.14
	FTIC Outstate	1.00	565	12.16	2.56	1.33	2.35	13.52	1.60
	LL Trns Instate	1.00	695	6.71	4.62	5.68	4.47	12.39	3.61
	LL Trns Outstate	1.00	340	8.32	4.33	5.11	4.25	13.44	2.69
	Term Total	1.00	3896	10.35	4.02	2.75	3.63	13.10	2.48
1st Winter	FTIC Instate	.91	2066	11.51	3.63	2.67	3.25	14.18	2.32
	FTIC Outstate	.90	503	12.61	3.26	1.93	2.82	14.55	1.94
	LL Trns Instate	.82	569	6.55	4.73	6.35	4.65	12.90	3.74
	LL Trns Outstate	.82	278	7.86	4.42	5.98	4.38	13.84	2.97
	Term Total	.88	3416	10.55	4.39	3.45	3.92	13.99	2.67
1st Spring	FTIC Instate	.84	1935	10.43	3.87	3.44	3.57	13.87	2.50
	FTIC Outstate	.84	477	11.41	3.39	2.68	3.18	14.09	2.04
	LL Trns Instate	.72	503	5.64	4.54	7.48	4.79	13.12	3.64
	LL Trns Outstate	.74	250	6.20	4.32	7.09	4.40	13.30	2.85
	Term Total	.81	3165	9.49	4.47	4.26	4.19	13.74	2.70
1st Summer	FTIC Instate	.30	681	4.87	3.59	4.08	3.96	8.95	3.82
	FTIC Outstate	.14	78	5.88	4.10	3.58	3.66	9.46	4.06
	LL Trns Instate	.39	271	2.93	3.51	6.96	4.58	9.90	3.92
	LL Trns Outstate	.23	78	2.82	3.38	7.97	4.83	10.80	3.98
	Term Total	.28	1108	4.32	3.72	5.03	4.42	9.35	3.91
2nd Fall	FTIC Instate	.69	1592	8.05	4.29	5.86	4.45	13.90	2.83
	FTIC Outstate	.66	370	9.15	4.06	5.34	4.20	14.50	2.22
	LL Trns Instate	.58	403	4.01	4.26	9.22	4.81	13.20	3.32
	LL Trns Outstate	.58	198	4.60	3.76	9.58	4.62	14.20	2.85
	Term Total	.66	2563	7.30	4.57	6.60	4.74	13.90	2.86
2nd Winter	FTIC Instate	.65	1493	6.68	4.31	7.28	4.62	14.00	2.73
	FTIC Outstate	.63	358	7.85	4.12	6.82	4.50	14.70	2.45
	LL Trns Instate	.52	364	3.13	3.68	10.50	4.72	13.60	3.51
	LL Trns Outstate	.54	182	3.11	3.68	10.70	4.92	13.80	3.35
	Term Total	.62	2397	6.05	4.45	7.96	4.85	14.00	2.89
2nd Spring	FTIC Instate	.62	1419	5.53	4.11	7.99	4.61	13.50	3.08
	FTIC Outstate	.61	342	5.78	4.17	8.30	4.44	14.10	2.50
	LL Trns Instate	.49	338	2.72	3.41	10.50	4.86	13.20	4.00
	LL Trns Outstate	.51	174	3.21	3.42	10.70	4.02	13.90	2.64
	Term Total	.58	2273	4.97	4.13	8.61	4.70	13.60	3.14
2nd Summer	FTIC Instate	.37	839	2.94	3.16	6.66	4.36	9.59	3.87
	FTIC Outstate	.31	174	3.23	3.18	7.30	4.17	10.50	3.71
	LL Trns Instate	.31	218	1.67	2.77	8.80	4.43	10.50	4.26
	LL Trns Outstate	.31	106	1.75	2.33	8.62	4.72	10.40	4.03
	Term Total	.34	1337	2.68	3.09	7.24	4.46	9.92	3.94

Table 3

Winter Cohort SCH Means By Student Type and Level Over Eight Consecutive Terms

Term	Student Type	R*	n	Lower $\bar{X}$	Lower SD	Upper $\bar{X}$	Upper SD	Total $\bar{X}$	Total SD
1st Winter	FTIC Instate	1.00	117	9.25	4.19	2.54	3.68	11.80	3.68
	FTIC Outstate	1.00	19	11.80	3.34	1.84	2.91	13.70	1.06
	LL Trns Instate	1.00	200	6.59	4.93	5.05	4.42	11.60	4.03
	LL Trns Outstate	1.00	70	7.06	4.67	5.37	3.97	12.40	3.66
	Term Total	1.00	406	7.68	4.83	4.23	4.27	11.90	3.80
1st Spring	FTIC Instate	.82	96	9.14	4.54	3.36	3.97	12.50	3.65
	FTIC Outstate	.79	15	11.50	3.14	2.53	3.58	14.10	1.62
	LL Trns Instate	.76	152	6.57	4.53	6.03	4.84	12.60	3.95
	LL Trns Outstate	.74	52	6.73	5.07	6.23	5.15	13.00	3.16
	Term Total	.78	315	7.61	4.78	5.09	4.77	12.70	3.66
1st Summer	FTIC Instate	.45	53	6.43	4.20	3.68	3.90	10.10	4.37
	FTIC Outstate	.26	5	7.80	3.83	2.40	3.36	10.20	3.11
	LL Trns Instate	.36	72	3.31	3.71	6.33	4.81	9.64	3.86
	LL Trns Outstate	.26	18	4.22	3.90	5.22	5.25	9.44	3.36
	Term Total	.36	148	4.69	4.18	5.11	4.67	9.80	3.95
1st Fall	FTIC Instate	.59	69	7.90	4.41	4.43	4.35	12.30	3.83
	FTIC Outstate	.63	12	6.67	3.68	7.17	4.41	13.80	2.08
	LL Trns Instate	.58	117	4.62	4.44	8.37	5.17	13.00	3.93
	LL Trns Outstate	.69	48	5.50	4.94	7.58	5.31	13.10	3.10
	Term Total	.61	246	5.81	4.69	7.05	5.20	12.90	3.68
2nd Winter	FTIC Instate	.54	63	6.62	4.56	6.03	4.92	12.70	3.75
	FTIC Outstate	.58	11	8.36	4.18	5.09	5.03	13.50	1.86
	LL Trns Instate	.54	108	4.29	4.69	9.14	5.49	13.40	4.02
	LL Trns Outstate	.60	42	4.36	4.25	8.81	4.77	13.20	3.19
	Term Total	.55	224	5.16	4.69	8.00	5.36	13.20	3.72
2nd Spring	FTIC Instate	.43	50	5.82	3.76	7.08	4.30	12.90	2.57
	FTIC Outstate	.63	12	5.58	4.27	8.08	4.40	13.70	1.30
	LL Trns Instate	.49	98	3.55	4.01	9.56	5.08	13.10	3.33
	LL Trns Outstate	.59	41	3.93	3.81	8.83	4.77	12.80	3.51
	Term Total	.50	201	4.31	4.02	8.71	4.87	13.00	3.10
2nd Summer	FTIC Instate	.21	25	3.08	3.50	6.12	4.25	9.20	4.37
	FTIC Outstate	.42	8	3.25	3.81	8.13	5.33	11.40	3.11
	LL Trns Instate	.28	57	1.93	2.48	8.18	3.70	10.10	3.49
	LL Trns Outstate	.39	27	1.89	3.03	9.48	4.38	11.40	3.95
	Term Total	.29	117	2.26	2.96	8.03	4.20	10.30	3.81
2nd Fall	FTIC Instate	.30	35	5.29	3.73	7.86	4.02	13.10	3.19
	FTIC Outstate	.47	9	6.56	4.39	7.89	4.14	14.40	3.05
	LL Trns Instate	.38	77	2.48	3.08	9.53	4.99	12.00	4.26
	LL Trns Outstate	.51	36	3.11	3.50	10.00	4.69	13.10	3.21
	Term Total	.39	157	3.48	3.63	9.17	4.71	12.70	3.79

Table 4

Spring Cohort SCH Means By Student Type and Level Over Eight Consecutive Terms

Term	Student Type	R*	n	Lower $\bar{X}$	Lower SD	Upper $\bar{X}$	Upper SD	Total $\bar{X}$	Total SD
1st Spring	FTIC Instate	1.00	69	8.14	4.12	2.65	3.15	10.80	3.84
	FTIC Outstate	1.00	15	11.10	2.29	1.33	1.99	12.50	1.77
	LL Trns Instate	1.00	102	5.85	4.96	5.04	4.34	10.90	4.33
	LL Trns Outstate	1.00	28	8.21	4.81	4.89	4.42	13.10	2.28
	Term Total	1.00	214	7.27	4.77	3.99	4.07	11.30	3.89
1st Summer	FTIC Instate	.38	26	5.81	4.03	2.73	3.50	8.54	3.30
	FTIC Outstate	.40	6	7.00	5.22	2.67	2.16	9.67	3.78
	LL Trns Instate	.46	47	4.32	3.85	5.17	4.12	9.49	3.26
	LL Trns Outstate	.43	12	4.83	3.79	4.58	5.12	9.42	4.38
	Term Total	.43	91	4.99	4.00	4.23	4.11	9.22	3.43
1st Fall	FTIC Instate	.67	46	6.48	4.57	5.54	4.58	12.00	4.15
	FTIC Outstate	.67	10	9.60	5.04	3.80	3.12	13.40	2.55
	LL Trns Instate	.62	63	4.71	4.03	7.21	4.56	11.90	4.21
	LL Trns Outstate	.71	20	6.80	4.58	7.05	4.90	13.80	3.33
	Term Total	.65	139	5.95	4.53	6.39	4.61	12.30	4.00
1st Winter	FTIC Instate	.58	40	6.92	4.32	5.02	4.35	11.90	4.08
	FTIC Outstate	.73	11	8.73	6.10	3.09	4.06	11.80	3.74
	LL Trns Instate	.52	53	3.51	4.15	9.17	4.73	12.70	3.86
	LL Trns Outstate	.64	18	6.94	5.55	7.89	5.55	14.80	2.46
	Term Total	.57	122	5.61	4.95	7.07	5.13	12.70	3.83
2nd Spring	FTIC Instate	.57	39	5.90	4.09	5.54	4.87	11.40	3.70
	FTIC Outstate	.53	8	9.25	4.80	3.00	3.66	12.30	2.66
	LL Trns Instate	.44	45	2.69	3.18	9.62	4.59	12.30	3.82
	LL Trns Outstate	.64	18	3.28	4.13	9.61	4.84	12.90	4.23
	Term Total	.51	110	4.40	4.24	7.69	5.17	12.10	3.77
2nd Summer	FTIC Instate	.25	17	2.65	4.01	5.94	4.34	8.59	3.24
	FTIC Outstate	.33	5	4.60	3.13	2.20	2.17	6.80	2.68
	LL Trns Instate	.25	25	1.88	2.79	7.96	5.30	9.84	4.17
	LL Trns Outstate	.36	10	2.00	2.45	10.40	5.46	12.40	4.33
	Term Total	.27	57	2.37	3.19	7.28	5.23	9.65	4.05
2nd Fall	FTIC Instate	.48	33	5.82	4.30	6.36	4.55	12.20	4.43
	FTIC Outstate	.40	6	5.50	4.59	9.00	6.03	14.50	3.51
	LL Trns Instate	.41	42	2.90	3.30	9.52	5.56	12.40	4.60
	LL Trns Outstate	.61	17	3.82	4.25	10.90	5.01	14.80	3.29
	Term Total	.46	98	4.20	4.06	8.67	5.38	12.90	4.34
2nd Winter	FTIC Instate	.42	29	4.38	3.62	6.97	4.87	11.30	3.81
	FTIC Outstate	.47	7	4.14	3.58	10.00	3.65	14.10	2.41
	LL Trns Instate	.36	37	1.76	2.72	10.60	5.33	12.30	4.76
	LL Trns Outstate	.64	18	3.39	3.96	10.80	3.73	14.20	3.83
	Term Total	.43	91	3.10	3.50	9.43	5.02	12.50	4.24

Table 5

Summer Cohort SCH Means By Student Type and Level Over Eight Consecutive Terms

Term	Student Type	R*	n	Lower $\bar{X}$	Lower SD	Upper $\bar{X}$	Upper SD	Total $\bar{X}$	Total SD
1st Summer	FTIC Instate	1.00	99	8.09	3.74	1.57	2.61	9.66	3.18
	FTIC Outstate	1.00	9	8.22	3.70	2.33	3.16	10.60	3.75
	LL Trns Instate	1.00	120	5.52	4.16	3.85	3.99	9.38	4.01
	LL Trns Outstate	1.00	14	4.50	4.16	4.71	4.51	9.21	4.19
	Term Total	1.00	242	6.62	4.18	2.91	3.67	9.52	3.68
1st Fall	FTIC Instate	.85	84	10.60	3.69	2.89	2.99	13.50	2.63
	FTIC Outstate	.67	6	8.67	5.16	4.50	5.72	13.20	2.23
	LL Trns Instate	.60	72	6.76	4.85	6.01	5.11	12.80	3.97
	LL Trns Outstate	.64	9	5.89	5.13	7.56	4.07	13.40	2.96
	Term Total	.71	171	8.65	4.71	4.51	4.44	13.20	3.26
1st Winter	FTIC Instate	.76	75	9.75	4.37	4.08	4.04	13.80	2.84
	FTIC Outstate	.67	5	10.70	4.32	3.33	3.78	14.00	1.55
	LL Trns Instate	.51	61	4.97	3.84	7.20	5.08	12.20	4.38
	LL Trns Outstate	.50	7	3.43	3.55	8.29	4.86	11.70	3.15
	Term Total	.62	149	7.53	4.80	5.52	4.78	13.10	3.61
1st Spring	FTIC Instate	.67	66	8.45	4.53	4.91	4.32	13.40	3.21
	FTIC Outstate	.56	5	9.80	5.40	2.80	4.38	12.60	3.97
	LL Trns Instate	.47	56	5.54	4.44	7.50	5.75	13.00	4.55
	LL Trns Outstate	.57	8	5.38	4.37	6.63	4.14	12.00	2.51
	Term Total	.56	135	7.11	4.72	6.01	5.10	13.10	3.80
2nd Summer	FTIC Instate	.36	36	3.89	3.70	4.64	3.87	8.53	3.21
	FTIC Outstate	.22	2	1.50	2.12	9.50	6.36	11.00	4.24
	LL Trns Instate	.28	34	1.76	2.20	8.68	4.87	10.40	4.53
	LL Trns Outstate	.29	4	6.00	2.31	5.75	5.06	11.80	3.30
	Term Total	.31	76	2.99	3.23	6.63	4.80	9.62	3.96
2nd Fall	FTIC Instate	.55	54	7.59	4.37	5.80	4.05	13.40	3.00
	FTIC Outstate	.56	5	6.20	2.17	6.00	2.92	12.20	3.77
	LL Trns Instate	.38	46	2.76	3.57	9.89	5.43	12.70	4.38
	LL Trns Outstate	.29	4	4.00	3.37	6.00	2.45	10.00	5.35
	Term Total	.45	109	5.36	4.54	7.54	4.99	12.90	3.77
2nd Winter	FTIC Instate	.55	54	5.78	4.28	7.83	4.68	13.60	3.09
	FTIC Outstate	.44	4	5.50	8.54	8.50	6.45	14.00	4.97
	LL Trns Instate	.39	47	3.09	3.46	9.55	4.98	12.60	3.71
	LL Trns Outstate	.36	5	1.60	1.52	10.20	7.82	11.80	6.80
	Term Total	.45	110	4.43	4.26	8.70	5.03	13.10	3.63
2nd Spring	FTIC Instate	.47	47	4.49	3.79	8.89	4.81	13.40	3.33
	FTIC Outstate	.33	3	5.33	3.21	6.00	5.29	11.30	2.08
	LL Trns Instate	.33	40	2.85	3.42	8.70	4.91	11.50	3.92
	LL Trns Outstate	.29	4	1.25	1.50	9.75	4.72	11.00	3.37
	Term Total	.39	94	3.68	3.64	8.76	4.81	12.40	3.65

Table 6

Comparison of Cohort Group Mean Upper Level SCH Weighted by Retention Rate by Student Type

Student Type	Cohort Group Fall	Winter	Spring	Summer
FTIC Instate	3.07	2.44	2.62	2.97
FTIC Outstate	2.62	3.02	2.23	2.54
LL Trns Instate	4.71	4.04	3.82	3.43
LL Trns Outstate	4.57	4.48	5.05	3.42
Total	3.42	3.63	3.49	3.21

From Table 6, it is clear that for all student types combined, reductions made in the Summer term would have the smallest effect on upper level SCH. However, it is likely that any substantial cut in lower level enrollment could not be satisfied by reducing new Summer students only; therefore, the Fall term would be the second best choice for initiating reductions, especially if out-of-state students are targeted as the primary group to be denied admission.

The SCH Prediction Model

The SCH prediction model is designed to estimate the SCH that would be lost for a period of up to two academic years as a result of limiting enrollment. The model has three major components: 1) the number of students denied admission; 2) mean SCH; and 3) retention rate. The model is designed to produce separate estimates for each of the four student types by term and SCH level. The model can be expressed as follows:

$SCH_{ik} = \Sigma N_{ij} R_{ij} \bar{X}_{ijk}$ where:

SCH_{ik} = student credit hours produced by student type i at level k

N_{ij} = number of students of type i denied admission in entering term j

R_{ij} = retention proportion for student type i and term j

$\bar{X}_{ijk}$ = mean SCH for student type i, term j and SCH level k

The appropriate values for $\bar{X}_{ijk}$ and R_{ij} are found in Tables 2 - 5. Institutional research had previously provided a model to convert SCH, and hence FTE, into student headcount by type. Using that model along with other analysis of admissions patterns it is possible to calculate how many students must be denied admission in order to conform to enrollment caps. This is the number of students used in the formula above. To illustrate the application of the model, a hypothetical example will be solved. For example, assume that 30 lower level out-of-state transfers are denied admission in the Fall and it is important to estimate the total reduction in SCH that would occur as a result of this cutback over the next two years. The $\bar{X}_{ijk}$ and R_{ij} values are found in Table 2 which contains Fall cohort data. The model for predicting SCH can now be operationalized.

SCH
LLTRNS OUTSTATE = TOTAL SCH

$$30(1.000)(13.44) + 30(.82)(13.84) + 30(.74)(13.30) + 30(.23)(10.80) + 30(.58)(14.20) + 30(.54)(13.8) + 30(.51)(13.9) + 30(.31)(10.4)$$

$$= 1893.47$$

Validation of the Model

The validation phase of this research was designed to test the accuracy of the model in predicting SCH behavior. Such a test involves the comparison of actual vs. predicted SCH for a sample of students. The SCH means and retention rates developed from the model group were used to estimate the SCH generated by the test group for eight consecutive terms. The comparisons of the actual and predicted SCH for each of the four cohort groups are shown in Tables 7 - 10. Additionally, these data are also graphed in Figures 1 - 4.

Table 7

Fall Cohort Validation Results of SCH Prediction Model

Term	Student Type	Predicted N	Actual N	Lower			Upper			Total		
				Predicted	Actual	% Error	Predicted	Actual	% Error	Predicted	Actual	% Error
1st Fall	FTIC Instate	2,113	2,113	23,856	24,037	- 0.8	3,930	4,011	- 2.0	27,786	28,048	- 0.9
	FTIC Outstate	552	552	6,354	6,558	- 3.1	734	902	-18.6	7,259	7,460	- 2.7
	LL Trns Instate	684	684	4,590	4,896	- 6.7	3,885	3,550	+ 9.4	8,475	8,446	+ 0.3
	LL Trns Outstate	364	364	3,029	3,074	- 1.5	1,860	1,783	+ 4.3	4,892	4,857	+ 0.7
	Term Total	3,713	3,713	38,430	38,565	- 0.4	10,211	10,246	- 0.3	48,640	48,811	- 0.4
1st Winter	FTIC Instate	1,923	1,930	22,132	21,924	+ 1.0	5,134	5,389	- 4.7	27,266	27,313	- 0.2
	FTIC Outstate	497	481	6,265	5,816	+ 7.7	959	1,088	-11.9	7,228	6,904	+ 4.7
	LL Trns Instate	561	570	3,674	4,217	-12.9	3,562	3,270	+ 8.9	7,235	7,487	- 3.4
	LL Trns Outstate	299	292	2,346	2,450	- 4.2	1,785	1,566	+14.0	4,131	4,025	+ 2.6
	Term Total	3,267	3,273	34,471	34,416	0.2	11,273	11,313	- 0.4	45,712	45,729	0.0
1st Spring	FTIC Instate	1,775	1,808	18,512	18,619	- 0.6	6,106	6,574	- 7.1	24,618	25,193	- 2.3
	FTIC Outstate	464	450	5,291	5,049	+ 4.8	1,243	1,213	+ 2.5	6,533	6,262	+ 4.3
	LL Trns Instate	493	501	2,778	3,059	- 9.2	3,684	3,456	+ 6.6	6,461	6,515	- 0.8
	LL Trns Outstate	269	267	1,670	1,869	-10.7	1,910	1,750	+ 9.1	3,582	3,619	- 1.0
	Term Total	3,008	3,026	28,542	28,596	- 0.2	12,812	12,993	- 1.4	41,324	41,589	- 0.6
1st Summer	FTIC Instate	634	670	3,087	3,459	-10.6	2,586	2,623	- 1.4	5,673	6,082	- 6.7
	FTIC Outstate	77	68	454	387	+17.4	277	239	+15.8	731	626	+16.8
	LL Trns Instate	267	266	782	963	-18.9	1,857	1,746	+ 6.3	2,641	2,709	- 2.5
	LL Trns Outstate	64	91	236	275	-14.2	667	593	+12.5	904	868	+ 4.2
	Term Total	1,040	1,095	4,491	5,084	-11.7	5,229	5,201	+ 0.6	9,721	10,285	- 5.5
1st Year	FTIC Instate	6,445	6,521	67,609	68,039	- 0.6	17,753	18,597	- 4.5	85,362	86,636	- 1.5
	FTIC Outstate	1,590	1,551	18,726	17,810	+ 5.1	3,213	3,442	- 6.5	21,961	21,252	+ 3.3
	LL Trns Instate	2,005	2,021	11,827	13,135	-10.0	12,996	12,022	+ 8.1	24,825	25,757	- 3.6
	LL Trns Outstate	1,016	1,014	7,286	7,677	- 5.1	6,223	5,692	+ 9.3	13,516	13,369	+ 1.1
	Term Total	11,028	11,107	105,839	106,661	- 0.8	39,557	39,753	- 0.5	145,334	146,414	- 0.7
2nd Fall	FTIC Instate	1,458	1,494	11,737	11,927	- 1.6	8,545	8,799	- 2.9	20,266	20,726	- 2.2
	FTIC Outstate	364	341	3,334	3,088	+ 8.0	1,946	1,883	+ 3.3	5,283	4,971	+ 6.3
	LL Trns Instate	397	407	1,591	1,731	- 8.1	3,658	3,635	+ 0.6	5,237	5,366	- 2.4
	LL Trns Outstate	211	228	971	1,007	- 3.6	2,022	2,198	- 8.0	2,998	3,205	- 6.5
	Term Total	2,451	2,470	17,889	17,753	+ 0.8	16,174	16,515	- 2.1	34,063	34,268	- 0.6
2nd Winter	FTIC Instate	1,374	1,413	9,175	9,310	- 1.5	9,999	10,142	- 1.4	20,190	19,452	+ 3.8
	FTIC Outstate	348	324	2,730	2,448	+11.5	2,372	2,240	+ 5.9	5,112	4,688	+ 9.0
	LL Trns Instate	356	391	1,113	1,361	-18.2	3,652	3,859	- 5.4	4,730	5,220	- 9.4
	LL Trns Outstate	197	208	611	785	-22.1	2,103	2,146	- 2.0	2,713	2,931	- 7.5
	Term Total	2,302	2,336	13,928	13,904	+ 0.2	18,324	18,387	- 0.3	32,229	32,291	- 0.2
2nd Spring	FTIC Instate	1,310	1,333	7,245	7,150	+ 1.3	10,467	10,743	- 2.6	17,686	17,893	- 1.2
	FTIC Outstate	337	312	1,946	1,940	+ 0.3	2,795	2,410	+16.0	4,748	4,350	+ 9.1
	LL Trns Instate	335	358	912	938	- 2.8	3,519	3,735	- 5.8	4,424	4,673	- 5.3
	LL Trns Outstate	186	200	596	654	- 8.9	1,986	2,150	- 7.6	2,580	2,804	- 8.0
	Term Total	2,154	2,203	10,703	10,682	+ 0.2	18,542	19,038	- 2.6	29,288	29,720	- 1.5
2nd Summer	FTIC Instate	782	787	2,299	2,299	0.0	5,207	5,094	+ 2.2	7,498	7,393	+ 1.4
	FTIC Outstate	171	157	553	507	+ 9.0	1,249	1,084	+15.2	1,797	1,591	+12.9
	LL Trns Instate	212	233	354	359	- 1.4	1,866	2,115	-11.8	2,226	2,474	-10.0
	LL Trns Outstate	113	112	198	233	-15.2	973	937	+ 3.8	1,185	1,170	+ 1.3
	Term Total	1,262	1,289	3,383	3,398	- 0.4	9,140	9,230	- 1.0	12,523	12,628	- 0.8
2nd Year	FTIC Instate	4,924	5,027	30,507	30,686	- 0.6	34,213	34,778	- 1.6	64,766	65,464	- 1.1
	FTIC Outstate	1,220	1,134	8,566	7,983	+ 7.3	8,362	7,617	+ 9.8	16,944	15,600	+ 8.6
	LL Trns Instate	1,300	1,389	3,969	4,389	- 9.6	12,779	13,344	- 4.2	16,725	17,733	- 5.7
	LL Trns Outstate	707	748	2,379	2,679	-11.2	7,091	7,431	- 4.6	9,474	10,110	- 6.3
	Year Total	8,169	8,298	45,842	45,737	+ 0.2	62,193	63,170	- 1.6	108,055	108,907	- 0.8
2 Years Combined	FTIC Instate	11,369	11,548	98,089	98,725	- 0.6	51,992	53,375	- 2.6	150,087	152,100	- 1.3
	FTIC Outstate	2,810	2,685	27,295	25,793	+ 5.8	11,571	11,059	+ 4.6	38,904	36,852	+ 5.6
	LL Trns Instate	3,305	3,410	15,792	17,524	- 9.9	25,778	25,366	+ 1.6	41,550	42,890	0.0
	LL Trns Outstate	1,723	1,762	9,661	10,356	- 6.7	13,318	13,123	+ 1.5	22,990	23,479	- 2.1
	2-Year Total	19,197	19,405	151,706	152,398	- 0.5	101,725	102,923	- 1.2	253,389	255,321	- 0.8

NOTE: Predicted values may not sum to the predicted totals due to round-off error.

Table 8

Winter Cohort Validation Results of SCH Prediction Model

Term	Student Type	Predicted N	Actual N	Lower			Upper			Total		
				Predicted	Actual	% Error	Predicted	Actual	% Error	Predicted	Actual	% Error
1st Winter	FTIC Instate	122	122	1,129	1,191	- 5.2	310	277	+11.9	1,440	1,468	- 1.9
	FTIC Outstate	24	24	283	271	+ 4.4	44	43	+ 2.7	329	314	+ 4.7
	LL Trns Instate	205	205	1,351	1,361	- 0.7	1,035	1,113	- 7.0	2,378	2,474	- 3.9
	LL Trns Outstate	62	62	438	463	- 5.5	333	328	+ 1.5	769	791	- 2.8
	Term Total	413	413	3,172	3,286	- 3.5	1,747	1,761	- 0.8	4,915	5,047	- 2.6
1st Spring	FTIC Instate	100	100	914	971	- 5.8	336	337	- 0.3	1,250	1,308	- 4.4
	FTIC Outstate	19	22	218	223	- 2.2	48	67	-28.4	267	290	- 7.8
	LL Trns Instate	156	160	1,024	1,055	- 3.0	940	939	+ 0.1	1,963	1,994	- 1.6
	LL Trns Outstate	46	51	309	382	-19.2	286	294	- 2.8	596	676	-11.8
	Term Total	322	333	2,451	2,631	- 6.8	1,640	1,637	+ 0.2	4,091	4,268	- 4.1
1st Summer	FTIC Instate	55	49	353	306	+15.4	202	155	+30.3	555	461	+20.3
	FTIC Outstate	6	7	49	45	+ 8.2	15	20	-25.1	64	65	- 2.1
	LL Trns Instate	74	78	244	359	-32.0	467	421	+11.0	711	780	- 8.8
	LL Trns Outstate	16	21	68	98	-30.6	84	133	-36.7	152	231	-34.1
	Term Total	149	155	697	808	-13.7	760	729	+ 4.2	1,457	1,537	- 5.2
1st Fall	FTIC Instate	72	76	569	591	- 3.8	319	365	-12.6	885	956	- 7.4
	FTIC Outstate	15	17	101	177	-43.0	108	47	+130.7	209	224	- 6.9
	LL Trns Instate	119	122	549	675	-18.6	995	900	+10.6	1,546	1,575	- 1.9
	LL Trns Oustate	43	39	235	196	+20.0	324	348	- 6.8	560	544	+ 3.0
	Term Total	252	254	1,464	1,639	-10.7	1,776	1,660	+ 7.0	3,250	3,299	- 1.5
1st Year	FTIC Instate	349	347	2,965	3,059	- 3.1	1,167	1,134	+ 2.9	4,130	4,193	- 1.5
	FTIC Outstate	64	70	647	716	- 9.6	215	177	+21.2	864	893	- 3.3
	LL Trns Instate	554	565	3,169	3,450	- 8.2	3,442	3,373	+ 2.1	6,605	6,823	- 3.2
	LL Trns Outstate	167	173	1,052	1,139	- 7.7	1,028	1,103	- 6.8	2,081	2,242	- 7.2
	Year Total	1,136	1,155	7,783	8,364	- 7.0	5,921	5,787	+ 2.3	13,709	14,151	- 3.1
2nd Winter	FTIC Instate	66	67	436	449	- 2.9	397	413	- 3.8	837	862	- 2.9
	FTIC Outstate	14	14	116	112	+ 3.9	71	82	-13.6	188	194	- 3.1
	LL Trns Instate	111	109	475	427	+11.2	1,012	976	+ 3.7	1,483	1,403	+ 5.7
	LL Trns Outstate	37	35	162	150	+ 8.1	328	356	- 7.9	491	506	- 3.0
	Term Total	227	225	1,172	1,138	+ 3.0	1,817	1,827	- .5	2,998	2,965	+ 1.1
2nd Spring	FTIC Instate	52	63	305	418	-27.0	371	381	- 2.5	677	799	-15.3
	FTIC Outstate	14	13	80	86	- 6.6	116	85	+36.9	116	171	-32.0
	LL Trns Instate	100	94	357	258	+38.2	960	942	+ 1.9	1,316	1,200	+ 9.7
	LL Trns Outstate	37	31	144	116	+23.9	323	319	+ 1.3	468	435	+ 7.6
	Term Total	207	201	890	878	+ 1.4	1,799	1,727	+ 4.1	2,685	2,605	+ 3.1
2nd Summer	FTIC Instate	26	30	79	98	-19.5	157	185	-15.2	236	283	-16.7
	FTIC Outstate	10	6	33	16	+104.8	82	33	+148.3	115	49	+134.5
	LL Trns Instate	57	65	111	128	-13.5	470	484	- 3.0	580	612	- 5.3
	LL Trns Outstate	24	19	46	49	- 6.7	229	185	+23.9	276	234	+17.8
	Term Total	120	120	271	291	- 7.0	962	887	+ 8.4	1,234	1,178	+ 4.7
2nd Fall	FTIC Instate	37	39	194	166	+16.6	288	310	- 7.2	480	476	+ 0.7
	FTIC Outstate	11	9	74	28	+164.3	89	96	- 7.3	162	124	+31.0
	LL Trns Instate	78	93	193	252	-23.3	742	983	-24.5	935	1,235	-24.3
	LL Trns Outstate	32	24	98	56	+75.6	316	265	+19.3	414	321	+29.0
	Term Total	161	165	560	502	+11.7	1,477	1,654	-10.7	2,046	2,156	- 5.1
2nd Year	FTIC Instate	181	199	1,015	1,131	-10.3	1,216	1,289	- 5.7	2,232	2,420	- 7.8
	FTIC Outstate	49	42	299	242	+23.5	354	296	+19.6	654	538	+21.5
	LL Trns Instate	346	361	1,132	1,065	+ 6.3	3,179	3,385	- 6.1	4,305	4,450	- 3.3
	LL Trns Outstate	130	109	452	371	+21.7	1,200	1,125	+ 6.7	1,655	1,496	+10.6
	Year Total	715	711	2,898	2,809	+ 3.2	6,191	6,095	+ 1.6	8,970	8,904	+ 0.7
2 Years Combined	FTIC Instate	530	546	3,980	4,190	- 5.0	2,381	2,423	- 1.7	6,362	6,613	- 3.8
	FTIC Outstate	113	112	943	958	- 1.5	512	473	+ 8.3	1,518	1,431	+ 6.1
	LL Trns Instate	900	926	4,297	4,515	- 4.8	6,626	6,758	- 2.0	10,911	11,273	- 3.2
	LL Trns Outstate	297	282	1,504	1,510	- 0.4	2,228	2,228	0.0	3,736	3,738	- 0.1
	2-Year Total	1,851	1,866	10,685	11,173	- 4.4	11,211	11,882	+ 1.9	22,678	23,055	- 1.6

NOTE: Predicted values may not sum to the predicted totals due to round-off error.

Table 9

Spring Cohort Validation Results of SCH Prediction Model

Term	Student Type	Predicted N	Actual N	Lower			Upper			Total		
				Predicted	Actual	% Error	Predicted	Actual	% Error	Predicted	Actual	% Error
1st Spring	FTIC Instate	62	62	505	540	- 6.5	164	102	+61.1	670	642	+ 4.3
	FTIC Outstate	10	10	111	107	+ 3.7	13	12	+10.8	125	119	+ 5.0
	LL Trns Instate	117	117	685	680	+ 0.7	590	658	-10.4	1,275	1,338	- 4.7
	LL Trns Outstate	31	31	255	208	+22.4	152	154	- 1.6	406	362	+12.2
	Term Total	220	220	1,600	1,535	+ 4.2	878	926	- 5.2	2,486	2,461	+ 1.0
1st Summer	FTIC Instate	24	38	137	254	-46.1	64	113	-43.1	201	367	-45.2
	FTIC Outstate	4	4	28	36	-22.2	11	8	+33.5	39	44	-12.1
	LL Trns Instate	54	58	233	238	- 2.3	278	310	-10.2	511	548	- 6.8
	LL Trns Outstate	13	12	64	48	+34.1	61	55	+11.0	126	103	+21.9
	Term Total	95	112	472	576	-18.0	400	486	-17.7	872	1,062	-17.9
1st Fall	FTIC Instate	42	37	269	327	-17.7	230	118	+95.0	498	445	+12.0
	FTIC Outstate	7	8	64	87	-26.1	26	25	+ 1.8	90	112	-19.8
	LL Trns Instate	73	87	342	452	-24.4	523	643	-18.7	863	1,095	-21.2
	LL Trns Outstate	22	21	150	119	+25.8	155	157	- 1.2	304	276	+10.1
	Term Total	143	153	851	985	-13.6	914	943	- 3.1	1,759	1,928	- 0.1
1st Winter	FTIC Instate	36	37	249	261	- 4.7	181	204	-11.5	428	465	- 8.0
	FTIC Outstate	7	8	64	77	-17.2	23	42	-46.3	86	119	-27.6
	LL Trns Instate	61	75	214	298	-28.3	558	665	-16.1	773	963	-19.8
	LL Trns Outstate	20	18	138	81	+70.0	157	158	- 0.9	294	239	+22.9
	Term Total	125	138	704	717	- 1.9	887	1,069	-17.1	1,593	1,786	-10.8
1st Year	FTIC Instate	164	174	1,331	1,382	- 3.7	643	537	+19.7	1,808	1,919	- 5.8
	FTIC Outstate	28	30	267	307	-13.0	72	87	-17.3	340	394	-13.8
	LL Trns Instate	305	337	1,476	1,668	-11.5	1,954	2,276	-14.2	3,431	3,944	-13.0
	LL trns Outstate	86	82	605	456	+32.7	524	524	0.0	1,127	980	+15.0
	Year Total	583	623	3,627	3,813	- 4.9	3,079	3,424	-10.1	6,712	7,237	- 7.3
2nd Spring	FTIC Instate	35	32	209	192	+ 8.6	196	182	+ 7.6	403	374	+ 7.7
	FTIC Outstate	5	6	49	48	+ 2.1	16	37	-57.0	65	85	-23.3
	LL Trns Instate	52	70	139	223	-37.9	495	646	-23.3	633	869	-27.1
	LL Trns Outstate	20	18	65	66	- 1.4	191	160	+19.2	256	226	+13.2
	Term Total	112	126	494	529	- 6.7	863	1,025	-15.8	1,358	1,554	-12.6
2nd Summer	FTIC Instate	16	15	41	36	+14.1	92	92	+ 0.1	133	128	+ 4.0
	FTIC Outstate	3	3	15	13	+16.8	7	18	-59.7	22	31	-27.6
	LL Trns Instate	29	46	55	89	-38.2	233	375	-37.9	288	464	-38.0
	LL Trns Outstate	11	8	22	17	+31.3	116	38	+205.4	138	55	+151.6
	Term Total	59	72	141	155	- 9.2	450	523	-13.9	573	678	-15.5
2nd Fall	FTIC Instate	30	26	173	131	+32.2	189	190	- 0.4	363	321	+13.1
	FTIC Outstate	4	5	22	39	-43.6	36	28	+28.6	58	67	-13.4
	LL Trns Instate	48	63	139	155	-10.2	457	629	-27.4	595	784	-24.1
	LL Trns Outstate	19	16	72	33	+118.9	206	178	+15.8	280	211	+32.6
	Term Total	101	110	425	358	+18.7	877	1,025	-14.4	1,306	1,383	- 5.6
2nd Winter	FTIC Instate	26	24	114	98	+16.4	182	198	- 8.3	294	296	- 0.6
	FTIC Outstate	5	5	20	33	-41.0	47	47	0.0	66	80	-17.2
	LL Trns Instate	42	58	74	106	-30.1	447	611	-26.9	518	717	-27.7
	LL Trns Outstate	20	15	67	22	+205.7	214	173	+23.9	282	195	+44.5
	Term Total	95	102	293	259	+13.2	892	1,029	-13.3	1,183	1,288	- 8.2
2nd Year	FTIC Instate	107	97	539	457	+17.9	661	662	0.0	1,198	1,119	+ 7.0
	FTIC Outstate	17	19	104	133	-21.8	104	130	-20.0	208	263	-20.9
	LL Trns Instate	171	237	407	573	-28.9	1,634	2,261	-27.7	2,038	2,834	-28.1
	LL Trns Outstate	70	57	228	138	+65.1	730	549	+33.0	959	687	+40.0
	Year Total	367	410	1,353	1,301	+ 4.0	3,060	3,602	-15.0	4,415	4,903	-10.0
2 Years Combined	FTIC Instate	271	271	1,870	1,839	+ 1.7	1,304	1,199	+ 8.8	3,006	3,038	- 1.1
	FTIC Outstate	45	49	371	440	-15.7	176	217	-18.9	548	657	-16.6
	LL Trns Instate	476	574	1,883	2,241	-16.0	3,588	4,537	-21.0	5,469	6,778	-19.3
	LL Trns Outstate	156	139	833	594	+40.2	1,254	1,073	+14.4	2,086	1,667	+25.1
	2 Years Combined	950	1,033	4,980	5,114	- 2.6	6,139	7,026	-12.6	11,134	12,140	- 8.3

NOTE: Predicted values may not sum to the predicted totals due to round-off error.

Table 10

Summer Cohort Validation Results of SCH Prediction Model

Term	Student Type	Predicted N	Actual T	Lower			Upper			Total		
				Predicted	Actual	% Error	Predicted	Actual	% Error	Predicted	Actual	% Error
1st Summer	FTIC Instate	102	102	825	786	+ 5.0	160	172	- 6.9	985	958	+ 2.9
	FTIC Outstate	9	9	74	77	- 3.9	21	5	+319.4	95	82	+16.3
	LL Trns Instate	108	108	596	569	+ 4.8	416	486	-14.4	1,013	1,055	- 4.0
	LL Trns Outstate	17	17	76	107	-28.5	80	60	+33.5	157	167	- 6.2
	Term Total	236	236	1,562	1,539	+ 1.5	687	723	- 5.0	2,247	2,262	- 0.7
1st Fall	FTIC Instate	87	86	919	942	- 2.4	251	227	+10.4	1,171	1,169	+ 0.1
	FTIC Outstate	6	7	52	83	-37.0	27	12	+126.1	80	95	-16.2
	LL Trns Instate	65	70	438	409	+ 7.1	389	509	-23.5	829	918	- 9.6
	LL Trns Outstate	11	12	64	93	-31.1	82	63	+30.6	146	156	- 6.5
	Term Total	168	175	1,450	1,527	- 5.1	756	811	- 6.8	2,212	2,338	- 5.4
1st Spring	FTIC Instate	78	76	756	760	- 0.6	316	271	+16.7	1,070	1,031	+ 3.8
	FTIC Outstate	6	6	65	55	+17.3	20	20	+ 0.4	84	75	+12.6
	LL Trns Instate	55	55	274	274	- 0.1	397	464	-14.5	672	738	- 8.9
	LL Trns Outstate	9	10	29	77	-62.1	70	54	+30.5	100	131	-24.1
	Term Total	146	147	1,102	1,166	- 5.5	808	809	- 0.2	1,917	1,975	- 2.9
1st Year	FTIC Instate	68	71	578	623	- 7.3	336	333	+ 0.8	916	956	- 4.2
	FTIC Outstate	5	5	49	52	- 5.0	14	10	+41.1	64	62	+ 2.4
	LL Trns Instate	51	52	281	194	+45.0	381	493	-22.8	660	687	- 3.9
	LL Trns Outstate	10	4	52	35	+48.9	64	14	+358.9	116	49	+137.3
	Term Total	132	132	940	904	+ 3.9	794	850	- 6.6	1,731	1,754	- 1.3
	FTIC Instate	335	335	3,081	3,111	- 1.0	1,063	1,003	+ 6.0	4,146	4,114	+ 0.8
1st Year	FTIC Outstate	26	27	265	267	- 0.7	82	47	+74.4	322	314	+ 2.4
	LL Trns Instate	279	285	1,591	1,446	+10.1	1,584	1,952	-18.9	3,178	3,398	- 6.5
	LL Trns Outstate	47	43	226	312	-27.4	303	191	+58.7	529	503	+ 5.1
	Year Total	682	690	5,052	5,136	- 1.6	3,042	3,193	- 4.7	8,103	8,329	- 2.7
2nd Summer	FTIC Instate	37	35	143	176	-18.8	170	146	+16.7	313	322	- 2.7
	FTIC Outstate	2	2	3	6	-50.5	19	9	+109.0	22	15	+45.2
	LL Trns Instate	30	34	53	88	-39.5	263	239	+23.5	315	327	- 3.8
	LL Trns Outstate	5	4	30	5	+491.6	28	45	-37.0	58	50	+16.3
	Term Total	73	75	219	275	-20.5	485	439	+10.5	704	714	- 1.4
2nd Fall	FTIC Instate	56	61	426	399	+ 6.7	325	398	-18.2	752	797	- 5.7
	FTIC Outstate	5	6	31	50	-37.5	30	40	-24.4	62	90	-31.7
	LL Trns Instate	41	45	113	118	- 4.0	406	450	- 9.8	521	568	- 8.2
	LL Trns Outstate	5	5	19	0	-	30	63	-53.0	49	63	-21.7
	Term Total	106	117	569	567	+ 0.4	801	951	-15.8	1,370	1,518	- 9.8
2nd Winter	FTIC Instate	56	54	324	327	- 0.8	439	404	+ 8.7	763	731	+ 4.4
	FTIC Outstate	4	6	22	32	-31.9	34	45	-25.2	55	77	-28.0
	LL Trns Instate	42	40	130	129	+ 0.9	358	403	-11.2	530	532	- 0.2
	LL Trns Outstate	6	4	10	6	+63.2	62	49	+27.4	72	55	+31.3
	Term Total	106	104	471	494	- 4.8	924	901	+ 2.5	1,391	1,395	- 0.3
2nd Spring	FTIC Instate	48	52	215	263	-18.2	426	458	- 6.9	642	721	-10.9
	FTIC Outstate	3	3	16	19	-16.7	18	22	-19.0	34	41	-18.1
	LL Trns Instate	36	38	102	97	+ 4.7	310	399	-22.3	410	496	-17.4
	LL Trns Outstate	5	4	6	13	-52.6	48	39	+23.3	54	52	+ 4.3
	Term Total	92	97	339	392	-13.6	806	918	-12.2	1,141	1,310	-12.9
2nd Year	FTIC Instate	197	202	1,107	1,165	- 5.0	1,362	1,406	- 3.1	2,470	2,575	- 4.1
	FTIC Outstate	14	17	72	107	-32.7	101	116	-12.9	173	223	-22.5
	LL Trns Instate	149	157	398	432	- 7.9	1,380	1,491	- 7.4	1,778	1,923	- 7.5
	LL Trns Outstate	21	17	87	24	+260.3	169	196	-13.7	235	220	+ 6.8
	Year Total	377	393	1,594	1,728	- 7.8	3,010	3,209	- 6.2	4,598	4,937	- 6.9
2 Years Combined	FTIC Instate	532	537	4,187	4,276	- 2.1	2,427	2,409	+ 0.7	6,616	6,685	- 1.0
	FTIC Outstate	40	44	337	374	- 9.8	183	163	+12.2	495	537	- 7.9
	LL Trns Instate	428	442	1,986	1,878	+ 5.7	2,968	3,443	-13.8	4,957	5,321	- 6.9
	LL Trns Outstate	68	60	313	336	- 6.9	472	387	+22.1	764	723	+ 5.6
	2 Year Total	1,059	1,083	6,639	6,864	- 3.3	6,061	6,402	- 5.3	12,701	13,266	- 4.3

NOTE: Predicted values may not sum to the predicted totals due to round-off error.

COMPARISON OF ACTUAL AND PREDICTED TOTAL STUDENT CREDIT HOURS FOR THE FALL COHORT GROUP OVER EIGHT CONSECUTIVE TERMS

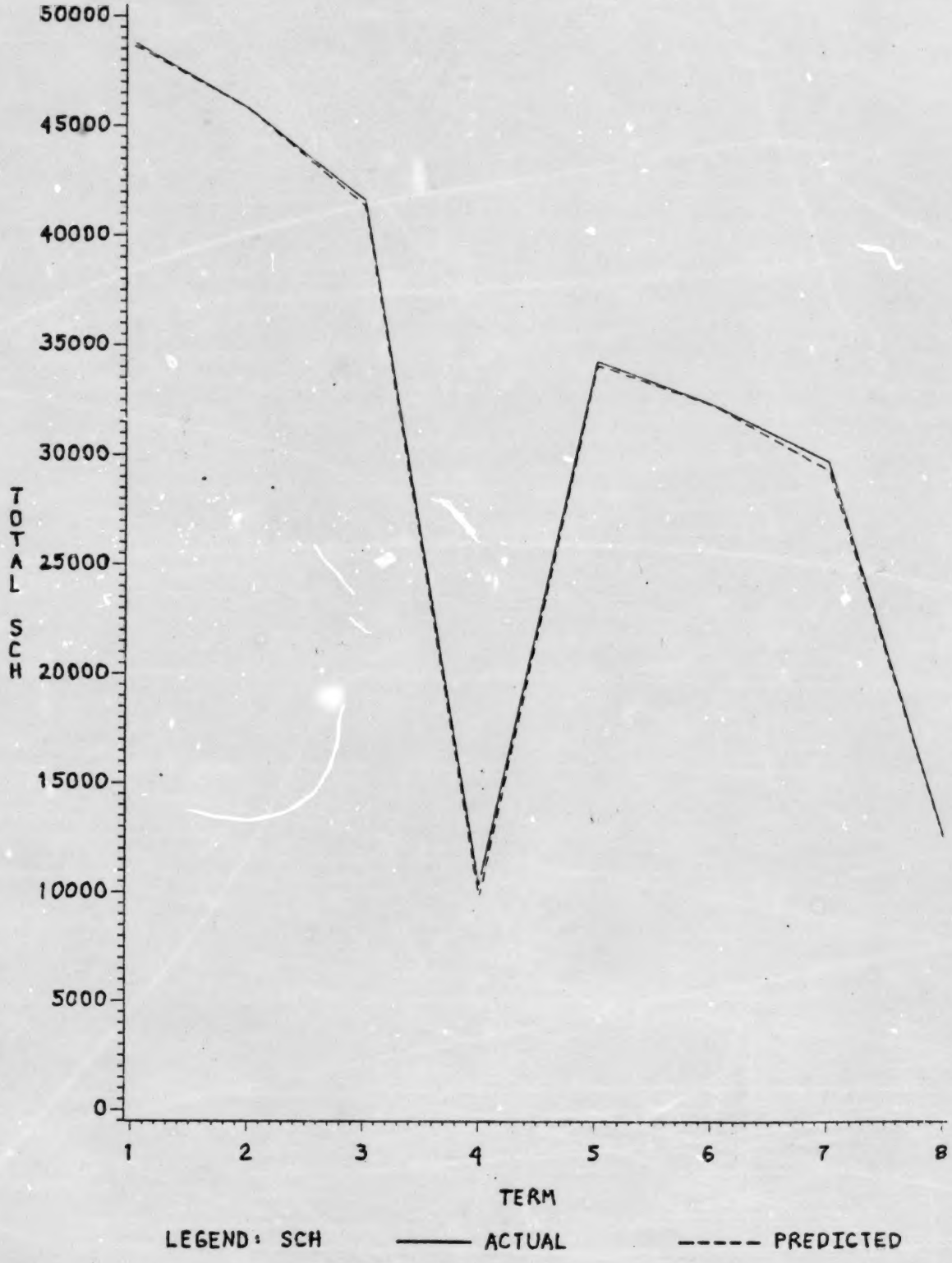

FIGURE 1

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COMPARISON OF ACTUAL AND PREDICTED TOTAL STUDENT CREDIT HOURS FOR THE WINTER COHORT GROUP OVER EIGHT CONSECUTIVE TERMS

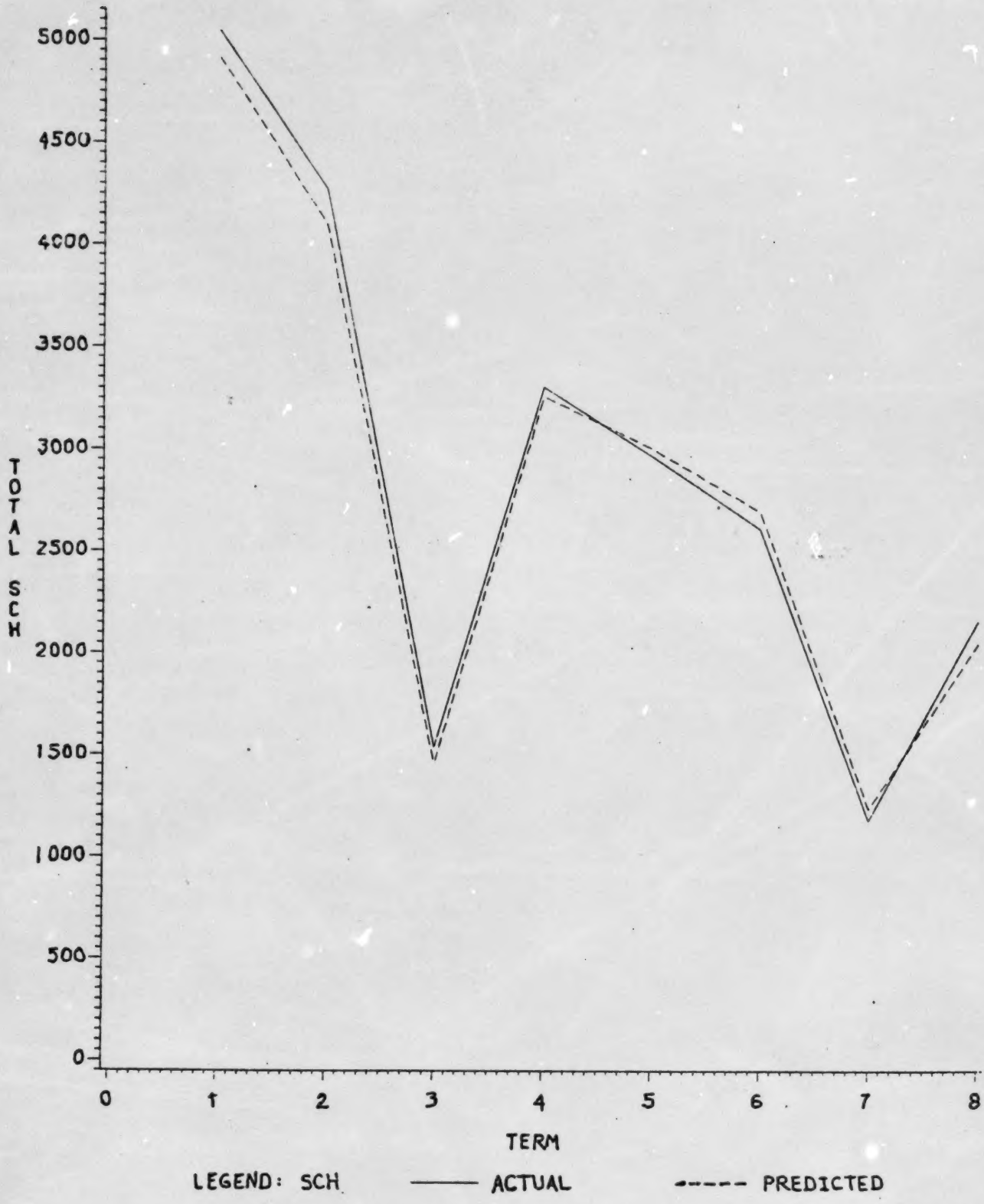

FIGURE 2

COMPARISON OF ACTUAL AND PREDICTED TOTAL STUDENT CREDIT HOURS FOR THE SPRING COHORT GROUP OVER EIGHT CONSECUTIVE TERMS

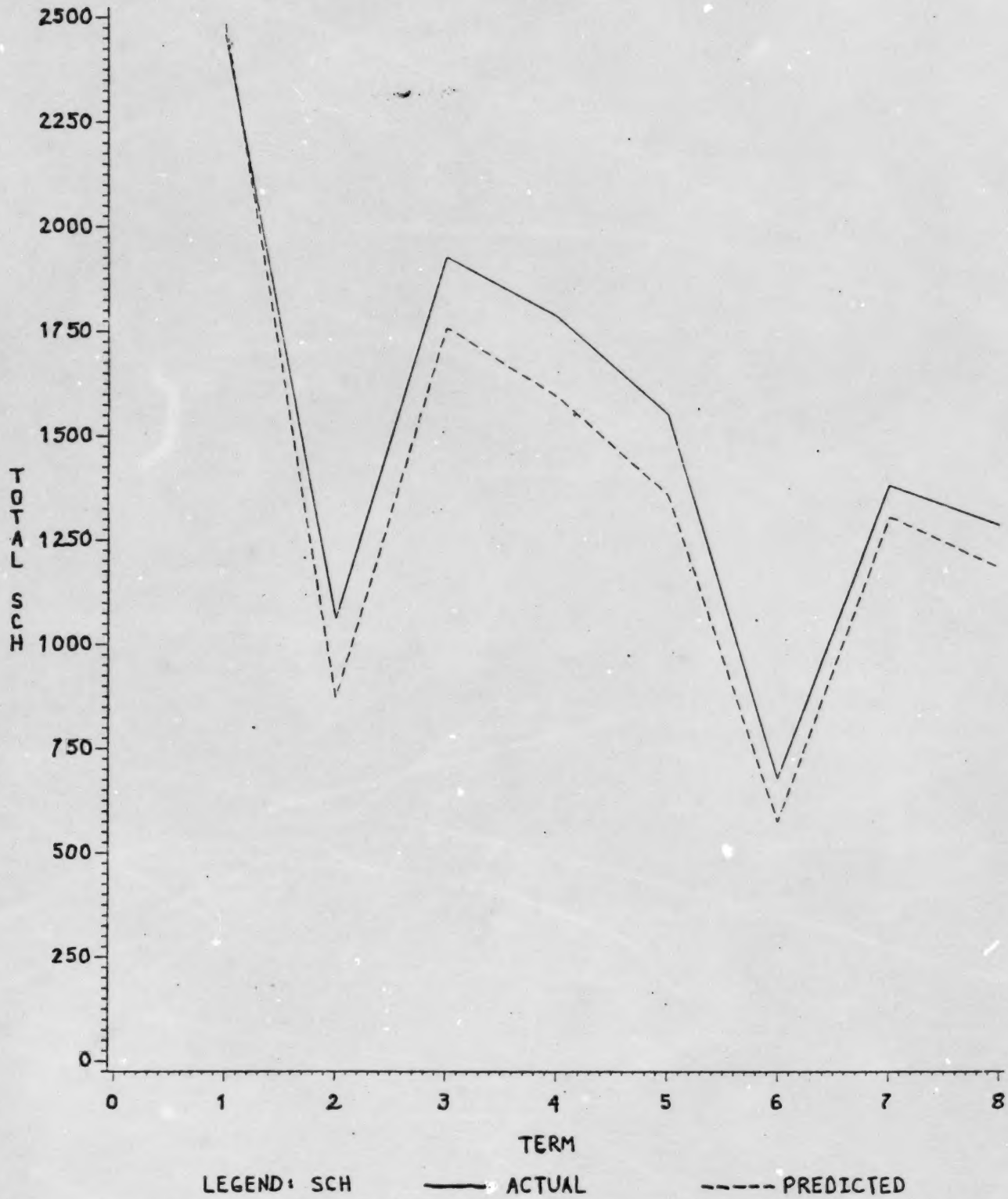

FIGURE 3
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COMPARISON OF ACTUAL AND PREDICTED TOTAL STUDENT CREDIT HOURS FOR THE SUMMER COHORT GROUP OVER EIGHT CONSECUTIVE TERMS

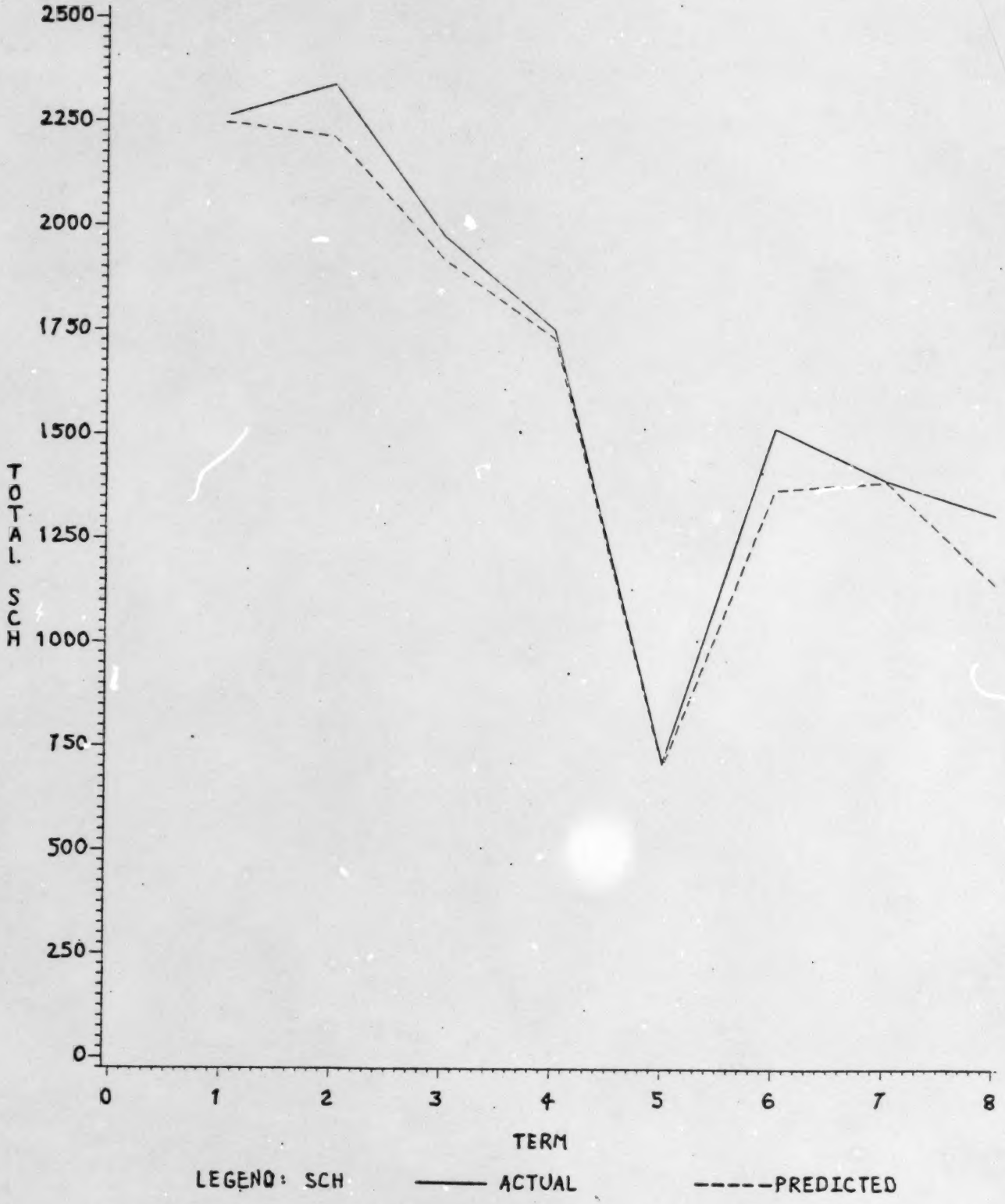

FIGURE 4

From the error percentages shown in Table 7.- 10, it should be noted that the model produces reasonably accurate predictions. Most, if not all, of the large percentage errors would appear to be attributable to small sample sizes. The errors are usually smaller when predicting total SCH as compared to the separate predictions for upper and lower SCH. This would apparently be a function of a cancellation effect, where positive and negative errors are balanced in the prediction of total SCH. In a similar manner, most of the larger errors made in predictions for a single term are cancelled when the data are combined into one or two academic years. The total SCH predictions of the four cohort groups over two years ranged from -0.8 to -8.3 percent error.

Conclusion

This research has attempted to develop a model for predicting future SCH for students who are denied admission to USF. Such a model could be an important planning tool for estimating the loss of state funding especially if enrollment limitations affect a large number of students. The most important feature of the model is that it provides a method for gauging not only the immediate effects of enrollment limitations on funding but the expected loss of SCH for two years as well.

The model for predicting SCH has been validated by the comparison of actual to predicted SCH for a sample of students. The most accurate predictions are made in the estimate of total SCH rather than in separate estimates for lower and upper SCH. Additionally, the errors were much smaller in predicting SCH on a yearly rather than on a term basis. For the two year period, the predicted SCH error for all student types was less than five percent for three of the four cohort groups. The largest total SCH error (-8.3%) occurred in the Spring cohort group.